



FCC RF EXPOSURE REPORT

For

Polaris Power Pack

MODEL NUMBER: PP02

FCC ID: SXO-PP02

REPORT NUMBER: 4788569835.3-4

ISSUE DATE: August 6, 2018

Prepared for

Sphero HK Limited

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Prepared by

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. REQUIREMENT	6



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Sphero HK Limited
Address: 4/F, 299QRC, 287-299 Queen's Road Central, Sheung Wan.
Hong Kong

Manufacturer Information

Company Name: Sphero, Inc.
Address: 4772 Walnut Street, Suite 206, Boulder, CO 80301
USA

EUT Description

EUT Name: Polaris Power Pack
Model: PP02
Brand Name: sphero
Sample Status: Normal
Sample ID: 1693356
Sample Received Date: July 09, 2018
Date of Tested: August 6, 2018

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47CFR§1.1307	Pass
FCC 47CFR§1.1310	Pass
FCC 47CFR§2.1093	Pass
FCC 47CFR§2.1091	Pass

Tested By:

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC 47CFR§1.1307(b)(1), FCC 47CFR§1.1310, FCC 47CFR§2.1093, KDB680106 D01v02.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p>IC(Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.</p> <p>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011</p>
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4. REQUIREMENT

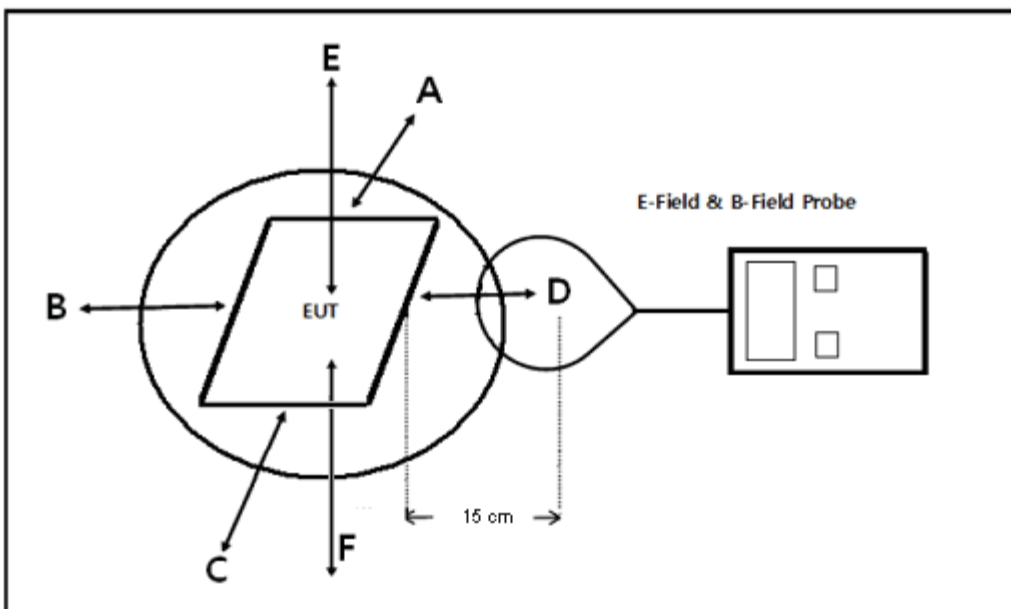
RF EXPOSURE LIMIT

Frequency Range (MHz)	E-field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (Minutes)
0.3 -- 1.34	614	1.63	(100)*	30
1.34 -- 30	824/f	2.19/f	(180/f ²)*	30
30 -- 300	27.5	0.073	0.2	30
300 -- 1500	--	--	f/1500	30
1500 -- 100,000	--	--	1.0	30

METHOD OF MEASUREMENT

- The RF exposure test was performed in shielded chamber.
- The measurement probe was placed at test distance (15cm) which is between the edge of the charger and the geometric centre of probe.
- The measurement probe used to search of highest strength.
- The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed. As bottom point is not required to test for desktop devices, so we scanning all the surfaces and recorded the worst level in F.
- The EUT were measured according to the dictates of KDB 680106D01v03.

BLOCK DIAGRAM OF TEST SETUP





EQUIPMENT APPROVAL CONSIDERATIONS

The EUT does comply with KDB 680106D01v03.

1) Power transfer frequency is less than 1 MHz.

Yes; the device operate in the frequency range from 125kHz.

2) Output power from each primary coil is less than or equal to 15 watts.

Yes; the maximum output power of each of the 15 individual primary coils is 3.5W.

3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

Yes; the transfer system includes only single primary and secondary coils.

4) Client device is placed directly in contact with the transmitter.

Yes; Client device is placed directly in contact with the transmitter.

5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).

Yes; The EUT is a mobile devices.

6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

Yes; The EUT field strength levels are less than 50% of the MPE limit.

7) For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm. E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.



MEASURING INSTRUMENT USED

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
Electric Field Probe	AR	FL7006Kit	0343904	Dec.12, 2017	Dec.12, 2018
System interface	TDK	SI-300-LSM	TRS-104-00045	Dec.12, 2017	Dec.12, 2018
H field Field Meter	Narda	ELT - 400	N-0390	July 18, 2018	July 18, 2019
H field Probe	Narda	ELT probe 100cm ²	M-0834	July 18, 2018	July 18, 2019

H FIELD STRENGTH

Test mode for wireless charger:

Full Load, Zero charge and Intermediate Charge mode

Note: For Full Load, Zero charge and Intermediate Charge mode, the battery capacity is 100%, 1% and 50%, 15 K002 were put in the EUT and all of them were in charging mode during test.

H-Filed Strength at 15 cm from the edges surrounding the EUT and 20cm above the top surface of the EUT (A/m)

Test Position	H-Filed Strength Measure Result		Limits (A/m)
	Intermediate Charge		
	uT	A/m	
A	0.275	0.220	1.63
B	0.447	0.358	1.63
C	0.266	0.213	1.63
D	0.332	0.266	1.63
E	0.460	0.368	1.63
F	0.843	0.674	1.63

E-Filed Strength at 15 cm from the edges surrounding the EUT (V/m)

Test Position	Probe Measure Result (V/m)	Limits (V/m)
	Intermediate Charge	
A	1.88	614
B	3.01	614
C	4.51	614
D	3.38	614
E	4.31	614
F	2.26	614

Note1: A/m = uT / 1.25

Note 2: All the modes had been tested, but only the worst data recorded in the report.

END OF REPORT